

REMARKS

Attached hereto is a request for an extension of time and the appropriate fee.

Applicant has addressed the issues in the drawings and specification and the informalities noted in claims 26 and 27.

The Office Action raised an issue as to the enabling teaching of the present specification and claims under the first paragraph of 35 U.S.C. § 112. The Office Action did not question the ability of a person of ordinary skill in this field to be able to enjoy the benefits of the present invention by replicating the embodiments disclosed in the specification. Rather, the Office Action contended that the claims used terminology that was broader than the preferred embodiments disclosed. There is no question that the actual language used in the claims is adequately set forth in the specification.

As the Examiner is aware, applicant under 35 U.S.C. § 112 is only required to show a preferred embodiment and that even if a person of ordinary skill in this field was required to do some experimentation, it would still meet the requirements of the first paragraph of 35 U.S.C. § 112. In the present case, a person of ordinary skill would be able to replicate the preferred embodiments without any experimentation, and those embodiments more than adequately support the claim language. Applicant is not aware of any limitation on selecting claim language that is, in fact, adequately supported by a specific embodiment even though the claimed element may use a generic word supported by a specific species. As noted in the MPEP § 2164.01(b), as long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement of 35 U.S.C. § 112 is satisfied.

As further noted in the case of *Spectra-Physics Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1533 (Fed. Cir. 1987), failure to disclose other methods by which the claimed invention may be made does not render a claim invalid under 35 U.S.C. § 112. Accordingly, applicant requests reconsideration of the rejections set forth in Paragraphs 6-8 of the Office Action.

The present invention is directed to a method of producing a lightweight window or mirror element for use in vehicles that will be highly resistant to abrasion while maintaining optical clarity by preventing the deteriorating effect of water absorption and thermal cycling. A number of highly skilled engineers and scientists have attempted to optimize transparent optical elements for use in a vehicle but there is still a demand to provide an economical and highly efficient structure in this industry.

Thus when differences that may appear technologically minor nonetheless have a practical impact, particularly in a crowded field, the decision-maker must consider the obviousness of the new structure in this light.

Continental Can Co. USA Inc. v. Monsanto Co.,
20 USPQ 2d 1746, 1752 (Fed Cir. 1991).

The Office Action rejected claims 16-25 as being obvious over a combination of the *Okaue et al.* U.S. Patent No. 5,622, 784 in view of the *Murase et al.* U.S. Patent No. 5,445,871.

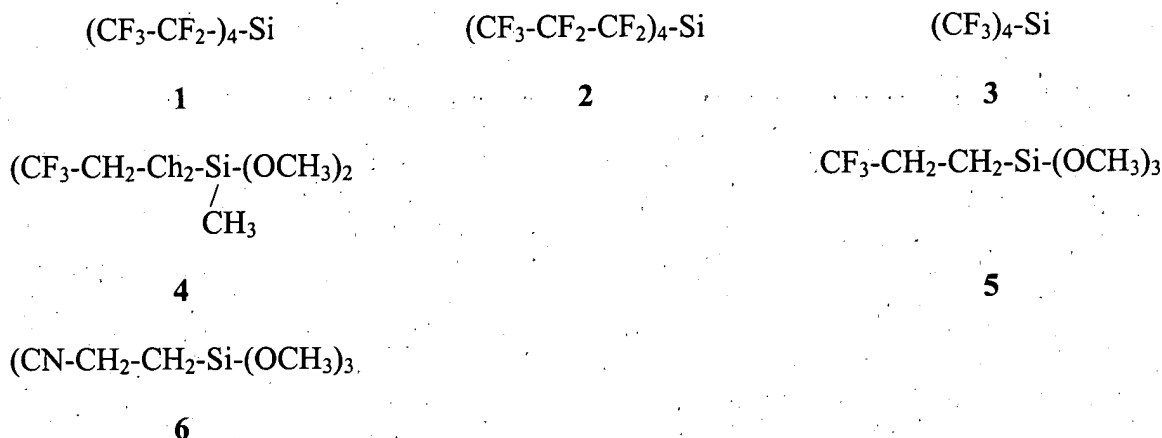
The *Okaue et al.* reference is directed at providing an inorganic coating film for a thermal setting resin ophthalmic lens that avoids a problem of water spotting. The inventors purportedly discovered that water spotting on a lens surface resulted from various ions in the glass such as lead or sodium dissolving into the water drop on the glass and forming an alkaline solution which would then react with acidic acids in the atmosphere such as carbon dioxide and sulfur dioxide to precipitate out compounds that could strongly adhere to the surface of the glass when the water evaporated. Thus, the purported invention in the *Okaue et al.* patent was to treat the

surface with a particular inorganic coating film that improved water repellency. Specifically, the Office Action contended that this disclosure taught a hydrophobic layer material, such as a perfluoroalkylsilane material and purportedly cited numerous examples in the specification. Most of the examples in the specification, however, simply referred to an inorganic coating film such as a silane organic fluorine. The most detailed examples were cited on Column 5, lines 45-47 as being suitable equivalent compounds. These compounds were dimethoxymethyl-3,3,3-trifluoropropylsilane 3, 3, 3-trifluoropropyltrimethoxysilane, 2-cyanoethyltrimethoxysilane.

Applicant respectfully traverses this assertion since it is clear that none of these cited compounds are chemically equivalent to perfluoroalkylsilane as described in the present specification.

A perfluoroalkylsilane is a compound where *perfluorinated* alkyl groups are attached to the silicone (Si) atom. *Perfluorinated* means that all hydrogens of the alkyl group are replaced by fluorine.

Examples of perfluorinated alkyl groups are compounds 1, 2 and 3 below.



None of the silane compounds described in lines 45-47 of Column 5 of the *Okaue et al* reference are perfluoroalkylsilanes.

Specifically, dimethoxymethyl-3,3,3-trifluoropropylsilane has the structure of Compound 4.

3,3,3-trifluoropropyltrimethoxysilane has the structure of compound 5, and 2-cyanoethyltrimethoxysilane has the structure of compound 6.

None of compounds 4, 5 or 6 are perfluoroalkylsilanes.

The Office Action further noted that Example 1 in Column 14 of the *Okaue et al* reference disclosed a lens having an anti-reflection coating where alternate quarter wavelength thicknesses of silicon dioxide and zirconium dioxide were provided. As can be readily determined, the total optical thickness of these five layers represents a classic quarter wavelength layer design with the second and third layer cooperating to be an equivalent $1/4 \lambda$ layer. Accordingly, from the top surface to the support surface of the lens, there is 130 nm of SiO_2 , 65 nm ZrO_2 , 65 nm SiO_2 , 130 nm ZrO_2 , and 130 nm SiO_2 . The surface of the lens itself was washed with an acetone (since it is a thermoset resin) in preparation for the deposition of the respective anti-reflection layers. If, in fact, this design contemplated a tie-bond coating of any

thickness, it would have to be taken into consideration in the overall quarter wavelength design. By using five layers, the breadth of the transmission band width around the design wavelength of 520 nm is broadened, and less light will be reflected from the surface of the lens. There is no discussion of the individual layers being specifically designed for abrasion purposes, and as known by a person of ordinary skill in this field, the specific optical thicknesses of each layer or equivalent layer should be precisely controlled for light transmission purposes.

The Office Action acknowledged that the *Okaue et al.* reference does not teach a hydrophobic coating material, nor does it teach inorganic layers having substantially equal thermal coefficients of expansion. The Office Action, however, simply asserted that such properties would be expected, presumably by a person of ordinary skill in this field. Applicant respectfully traverse this assertion. If this rejection is maintained, applicant would request that a reference be cited to support such assertion of matters of common knowledge pursuant to MPEP § 706.02(a), particularly since a thermoset plastic would have a much smaller coefficient of thermal expansion than a thermoplastic such as a polycarbonate or acrylic plastic substrate.

The multi-layer abrasion-resistant coating of our present invention does not have matching optical thickness layers for anti-reflective purpose, but rather has a relatively thick base layer that is applied over a tie coating, also of a substantial size that is significantly greater than the total anti-abrasive thickness to encapsulate and render any unreacted monomers chemically inert. The tie-bond layer, for example, can be triethoxymethyl silane $\text{CH}_3\text{Si}(\text{OC}_2\text{H}_5)_3$.

Additionally, the final layer coating on the surface is also larger than the intermediate layers. As noted on page 6 of our specification, the composition and thickness of our various layers provided an increase weatherability and durability while minimizing any coloring. As noted on page 7, the abrasion-resistant coating and our subsequent hydrophobic layer that was

provided through a dry coating technique had matching thermal coefficients of expansion with the thermal coefficient of expansion of substrate. These considerations are neither mentioned nor taught in the *Okaue et al.* reference.

The *Murase et al.* (U.S. Patent No. 5,445,871) was cited to teach a tie-bond layer of .1 to 10 microns. The Office Action contended it would be obvious to provide this primer layer to the *Okaue et al.* disclosure of alternating layers of an anti-reflective coating. Applicant respectfully traverses this contention since the *Okaue et al.* is teaching an anti-reflective coating on an acetone washed plastic surface of a particular type of thermal setting plastic, and a person would not simply add an inorganic material layer without taking into account the impact on the anti-reflective coating.

The *Murase* reference was of interest in mentioning the use of plastic plate for various applications and specifically suggested a cured primer film on a plastic substrate to provide satisfactory hardness and adhesion. The reference does not suggest nor teach a plurality of alternating layers to be deposited above the cured primer film. Carefully reviewing each of the examples, the *Murase et al.* reference only suggests a single layer thickness of preferably silicon dioxide or aluminum oxide between .1 to 10 microns.

It is readily apparent that there is no overall teaching that would suggest the combination of the *Okaue et al.* and the *Murase et al.* reference except for the suggestion of our present invention. Even if these two references were modified, they would fail to teach the anti-abrasive multi-layer coating and hydrophobic combination of our claims for use on car windows.

For example, the *Okaue et al.* example cited by the Office Action of alternate layers of silicon dioxide and zirconium dioxide is for an anti-reflective coating to insure that all of the light passes through a lens. As can be appreciated, a car window does not necessarily want all

the light and correspondingly heat to pass to the interior of a vehicle. The present invention does not provide equivalent multi-layers to achieve this transmission purpose, but rather provides multi-layers for the purposes of an anti-abrasion layer to increase the life of, for example, a car window.

Even if this prior art could be hypothetically modified and supplemented by the assumptions made in forming the Office Action rejection, it still would not render the modification obvious unless a prior art teaching suggested the desirability of the modification.

The mere fact that the prior art *may* be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. *In re Fritch*, 23 USPQ 2d 1780, 1783-84 (Fed. Cir. 1992).

[T]he level of skill in the art is a prism or lens through which a judge or jury views the prior art and the claimed invention. This reference point prevents these deciders from using their own insight or, worse yet, hindsight, to gauge obviousness. Rarely, however, will the skill in the art component operate to supply missing knowledge or prior art to reach an obviousness judgment. Skill in the art does not act as a bridge over gaps in substantive presentation of an obviousness case, but instead supplies the primary guarantee of objectivity in the process. *Al-Site Corp. v. VSI International, Inc.*, 50 U.S.P.Q.2d 1161 (Fed. Cir. 1999) (citations omitted).

The Federal Circuit has addressed this issue in the case of *In re Rouffet*, 47 U.S.P.Q.2d 1453, 149 F.3d 1350 (Fed. Cir. 1998). In *Rouffet*, the Court noted that virtually all inventions are combinations of old elements. It concluded that:

an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention as a blueprint for piecing together elements in the prior art to defeat the patentability of the

claimed invention. Such an approach would be 'an illogical and inappropriate process by which to determine patentability.' *Id.* at 1357.

The Court pointed to the absence of any teaching *in the cited references* for making the proposed modifications, and found that the Board had *reversibly erred* in determining that the invention was rendered obvious because there was no identification of motivation to choose the selected references and to combine them in the manner cited by the examiner.

Referring to the amended claim 16, our invention calls for a multi-layer abrasion-resistant coating of a plurality of alternating layers of respectively different thicknesses deposited by a dry coating technique. Additionally, the hydrophobic coating was also deposited by a dry coating technique. The dependent claims add additional patentable features to this disclosure.

Claim 30 further defines not only the multi-layer abrasion-resistant coating with a thickness of a first layer, over a tie-bond layer, being larger than the respective subsequent layers, but further deposits the hydrophobic coating so that the thickness of the hydrophobic coating and the abrasion-resistant coatings will match the thermal coefficient of expansion of a transparent plastic substrate to provide a relatively long life for the product. Dependent claims 31-35 add additional novelty features to the present invention.

Claim 36 also provides a particular plastic substrate, a thickness of the silicon dioxide and matching thermal expansion to the plastic substrate. Dependent claims 37-40 further define novel features.

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It is believed that the case is now in condition for allowance, and an early notification of the same is requested. If the Examiner believes that a telephone interview will help further the prosecution of this case, he is respectfully requested to contact the undersigned attorney at the listed telephone number.

I hereby certify that this correspondence is being sent via first class mail to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on July 25, 2003.

Very truly yours,

SNELL & WILMER L.L.P.

By: _____

James Lee

[Signature]

Signature

Dated: July 25, 2003

[Signature]

Joseph W. Price

Registration No. 25,124

1920 Main Street, Suite 1200

Irvine, California 92614-7230

Telephone: (949) 253-4920